

Date: Wed, 9 Nov 94 11:08:40 PST
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: List
Subject: Info-Hams Digest V94 #1201
To: Info-Hams

Info-Hams Digest Wed, 9 Nov 94 Volume 94 : Issue 1201

Today's Topics:

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 switching power supplies, why or why not?
 Test to rec.radio.amateur.misc
 TUTORIAL: dB & dBm (REVISED)
 What's your favorite key?

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 8 Nov 1994 05:45:51 GMT
From: myers@cypress.west.sun.com (Dana Myers)
Subject: 0 to Extra

In article 071194115430@m14494-mac.mitre.org, mwhite@mitre.org (Michael White)
writes:

>Dale Piedfort wrote:

>

>> Steve Griggs now AC6CF took all the written and 20 wpm exams at one
>> sitting...

>

>Wow! AC6CF is my hero! I went from General to Extra in one sitting, and I
>thought *that* was a lot. Good show, Steve!

Hmm.... Les AB6QV went from 0 to Extra as I watched. He's pretty cool, too.

In all fairness, Les was licensed before in Poland.

* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* "Antenna waves be burnin' up my radio" -- ZZ Top *

Date: 9 Nov 1994 09:08:23 -0600
From: jmaynard@admin5.hsc.uth.tmc.edu (Jay Maynard)
Subject: ARRL Sweepstakes exchange

In article <39qmdh\$fofo@newsbf01.news.aol.com>,
JimKD0AV <jimkd0av@aol.com> wrote:
>Many contesters enjoy SS because of the
>exacting exchange, better than meaningless signal report and qth (etc).
>It certainly keeps you on ur toes.

I enjoy SS because the exchange gives me a better chance against the big
guns - I can come closer to their QSO rate, and feel like I'm more in the
contest.

nr 138 A K5ZC 71 STX

--

Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@admin5.hsc.uth.tmc.edu | adequately be explained by stupidity.
The US Constitution: 1789-1994. RIP.

Date: 9 Nov 94 14:30:00 GMT
From: RFA%32868.DEcnet@consrt.rockwell.com (32868::RFA)
Subject: COPPER STATE NET

I would like to hear from anyone knowing the time and frequency of the "Copper
State Net". I don't read the news, an e-mail reply would be appreciated.

73,

Ray, K7MLE

rfa@dllws.cca.rockwell.com

Date: 9 Nov 94 18:20:13 GMT
From: Waltk@pica.army.mil
Subject: DXBASE & Hardware failures.

I also use DXBASE 3.0 with an Icom IC-765. I understand why you're having the "Unable to Link Radio" message. This will always happen when the radio is switched off *OR* when you're spinning the tuning knob, changing bands or modes at the same instant the comm interface routine is attempting to initialize. IMHO, its a minor problem and the solution is easy (rule #1 in software engineering): Don't do that.

I initially built the rather trivial discrete transistor interface from a circuit in QST. Since there was no means to buffer the data from the radio, the failures you refer to were more common. I replaced that interface with one that uses a MAX-232 chip, which provides buffering of the data among other things. I never had any problems with the primitive interface and CT. I suspect DXBASE is looking at the RTS, CTS, or DTR lines, whereas CT's COMTSR programs use XON/XOFF protocol by default.

The one thing I wish Sci.Sol. would do is allow baud rate selection as an option the user setup of DXBASE. The Icom can do 9600 baud, and so can CT and most other programs. But, no such luck in DXBASE, we're "hardwired" to a rather slow 1200 baud. Anyone listening at Scientific Solutions??

My hardware setup is as follows: 386DX/33, Mouse on COM1 std IRQ, KAM+ TNC on COM2 std IRQ, IC-765 on COM3 IRQ 2/9, internal Boca 14.4kB modem on COM4 IRQ 5, Printer on LPT1, CW keying and Contest Voice Blaster PTT and Record control on LPT2, Sound Blaster Pro (8bit) card on IR07 DMA channel 1.

Walter Kornienko - K2WK waltk@pica.army.mil Bldg. 351, Picatinny Arsenal,
Senior Software Engineer Dover, New Jersey
Decision Systems Technology Inc. 201-724-3158/4879

Date: Wed, 9 Nov 1994 09:44:19 GMT
From: wbdwn@skcla.monsanto.com
Subject: Line voltage in Australia

If the voltage in Australia is 230/240 vac, why can't you simply

split the circuit into two 115/120 vac circuits? ie. is the voltage between a hot leg and ground 115/120 vac and the voltage between each hot leg 230/240 vac?

--

William Downs PhD Sr. Process Dev. Engineer
4901 Searle Parkway Research and Development
Skokie, IL 60077 Searle Pharmaceuticals

Date: Wed, 9 Nov 1994 15:00:39 GMT
From: gary@ke4zv.atl.ga.us (Gary Coffman)
Subject: Procedure for calling Mir/Shuttle help needed

In article <39p7hf\$gga@newsbf01.news.aol.com> tomsunman@aol.com (TOM SUNMAN) writes:

> Hello. I'm a new ham and I'm VERY interested in trying to contact Mir
>and the shuttle (when sarex is used of coarse!).
>My question is, what is the PROPER procedure for calling these craft? Is
>it a regular call (their callsign then "this is" my callsign)? Maybe
>"shuttle atlantis" (or whichever) "this is my callsign"? I want to make
>sure I do it properly.
> I have an HT and I understand they can work but I may need higher
>power and a better antenna to increase my chances. I know the uplink is
>145.550, I suppose I need to switch to the downlink after I make my call
>to hear their responce. What is the downlink frequency? Any help on
>getting me started on these contacts would be appreciated. My license
>should be here in about 5 weeks so I've got some time to learn what I need
>to know. Thanks!

Ok, when your prediction program says your station is in the footprint of MIR or Shuttle, listen on 145.55 MHz. If you hear nothing after a reasonable period, give a standard call, IE U5MIR this is WA4XYZ. For MIR, you call on the same frequency since they operate simplex. For Shuttle, you transmit on a designated uplink frequency, usually in the 144.91 to 144.99 range. That will be announced before the mission. Do **not** transmit on the Shuttle downlink frequency, they don't listen there, and it will annoy others trying to copy the Shuttle.

If, on the other hand, you do hear something when you monitor 145.55 MHz, should be either the Shuttle or MIR, listen to what's going on. Usually they will be in QSO with another station. Wait until they finish and then transmit just your callsign on the uplink frequency 2 or 3 times. If they hear you, they will respond. There may be quite a few other stations calling, and they may respond to one of them instead. Wait until that QSO is over and try again. They may be operating packet instead of voice. If you hear packet signals, try to contact them via packet. They won't be listening

for voices at that point.

Keep your calls short, and speak clearly and distinctly, listen to VOA to learn how this should sound. In the case of MIR you are dealing with non-native speakers of English. Many of the MIR operators only know "aviation English". Phonetics should generally be avoided as time wasters. If you are strong enough to copy, and you speak clearly, there will be few errors. Only use phonetics if they mangle your call on the first try. Use only standard phonetics. If you speak fluent Russian, use that with MIR, it'll give you a real edge. If there isn't an intense pileup, the MIR operators often like to chat with operators who can speak their language. They aren't trying for DX awards, and they're up there for a *long* time.

Shuttle operators generally *are* trying to rack up the contacts due to the short duration of their missions. This is for the benefit of *ground* stations not for their benefit. Be brief with them and let them move on to servicing other stations.

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		emory!kd4nc!ke4zv!gary
534 Shannon Way		Guaranteed!		gary@ke4zv.atl.ga.us
Lawrenceville, GA 30244				

Date: 8 Nov 1994 23:46:04 GMT
From: Rob Freyder <freyder@gtetel.com>
Subject: R.S. 2 Meter Amplifier???

> In article <Cyq5zD.25q@freenet.carleton.ca> bh347@FreeNet.Carleton.CA (Gerard Charron) writes:

>

> HI there.. Just read a packet message that Radio Shack in the USA are
> possibly selling an RF Amplifier for handhelds. .Has anyone heard any-
> thing about this or seen the catalog??. Would appreciate some reply
> since I could use such a little green monster for my handheld here!!!

>

> Disclaimer: I work part-time for Radio Shack but don't expect to gain from
> this message. I post this for general information and offer my opinion.

>

> On page 39 of the catalog I read:

> Five Watts in gives 30 Watts out

> Receive pre-amplifier

> Helical receive filter

> \$120

>
> This item is not yet available. As of last month the store computer
> didn't even have a current listing for that catalog number (19-1122).
>
> (Opinion)

Yup. Works Great. Bought one here in Dallas about 10 days ago.
Most stores don't have 'em yet. I lucked out and found a mgr
that special ordered one to get it in stock.

The warehouse in Fort Worth has them and will ship them to you.
Its in the latest catalog ... sorry I dont have one handy.

rob.

freyder@netcom.com

Date: 9 Nov 94 13:50:15 GMT
From: theo_schmitz@VNET.IBM.COM (Theodor Johannes Schmitz)
Subject: Storage/extending lifetime of lead gel-cell batteries

I have got some used 12 V/7AH maintenance free gel cell batteries
and I want to store them for future projects.
The question that i I have is: What is the best method for storing
and stopping the ageing process.
In what state is it best - charged or discharged, maybe cooled or
even deep freezed ?

Sugestions welcome via this newsgroup or direct email
thanx

73,
Theo (DB9EJ)

=====
Theo Schmitz / IBM Mainz / Materials Lab. 4627
Email Internet: tschmitz@mazvm01.vnet.ibm.com
Packet: DB9EJ@DB0GV.DEU.EU
Fone: 49(germany)6131-842044
Fax: 49(germany)6131-846810
=====

I never used to be able to finish anything but now I

Date: Wed, 9 Nov 1994 12:22:15 +0000
From: Mike@g4kfk.demon.co.uk (Mike Gathergood)
Subject: switching power supplies, why or why not?

Hi Alan,

> I currently use a 20-amp Astron power supply for my HF rig and a
> car battery for my 2m/440 mobile. Is there any reason why you
> should or should not use a "switching power supply" from a PC
> for powering a radio? What are the differences between the P/S's
> that I use and the ones in PC's?

The +5 volt rail will need a dummy load in order for the +12 volt rail to work correctly. Apart from that, it ought to work, but remember the current available from the +12 volt line of the average PC supply is only 5 amps or so.

73
Mike
G4KFK

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* Tel 44 1753 582085 * Fax 44 1753 592726 * Mail mike@g4kfk.demon.co.uk *

Date: Wed, 9 Nov 1994 15:21:54 GMT
From: mrus@intgp12.ih.att.com (-Rus,M.)
Subject: Test to rec.radio.amateur.misc

This is my first and last test to this newsgroup.

I am a new user and just trying Pnews.

73's
Martin Rus
PE1POJ (The Netherlands)
martin.rus@hvgtw.att.com

Date: Tue, 8 Nov 1994 22:24:07 GMT
From: phb@syseng1.melpar.esys.com (Paul H. Bock)

Subject: TUTORIAL: dB & dBm (REVISED)

Author's Note: This tutorial was originally written for digital & software engineers and non-engineers, but it may be of value to others who wish a better understanding of the decibel and its value in electronics work.

All references to "telephone company" and "telephone company engineers" are based on anecdotal evidence rather than historical fact, so the author apologizes for any inaccuracies.

Comments and criticisms may be e-mailed to:

* Paul H. Bock, Jr. K4MSG * Principal Systems Engineer
* E-Systems/Melpar Div. * Telephone: (703) 560-5000 x2062
* Internet: pbock@melpar.esys.com

* * * * *

USING AND UNDERSTANDING DECIBELS

by

Paul H. Bock, Jr. K4MSG

General

The decibel, or dB, is a means of expressing either the gain of an active device (such as an amplifier) or the loss in a passive device (such as an attenuator or length of cable). The decibel was developed by the telephone company to conveniently express the gain or loss in telephone transmission systems. The decibel is best understood by first discussing the rationale for its development.

If we have two cascaded amplifiers as shown below, with power gain factors A1 and A2 as indicated, the total gain is the product of the individual gains, or $A1 \times A2$.

Input >----- Amp #1 ----- Amp #2 -----> Output

A1 = 275

A2 = 55

In the example, the total gain factor $A_t = 275 \times 55 = 15,125$. Now, imagine for a moment what it would be like to calculate the total gain of a string of amplifiers. It would be a cumbersome task at best, and especially so if there were portions of the cascade which were lossy and reduced the total gain, thereby

requiring division as well as multiplication.

It was for the reason stated above that Bell Telephone developed the decibel. Thinking back to the rules for logarithms, we recall that rather than multiplying two numbers we can add their logarithms and then take the antilogarithm of this sum to find the product we would have gotten had we multiplied the two numbers.

Mathematically,

$$\log (A \times B) = \log A + \log B$$

If we want to divide one number into another, we subtract the logarithm of the divisor from the logarithm of the dividend, or in other words

$$\log (A/B) = \log A - \log B$$

The telephone company decided that it might be convenient to handle gains and losses this way, so they invented a unit of gain measurement called a "Bel," named after Alexander Graham Bell. They defined the Bel as

$$\text{Gain in Bels} = \log A$$

where A = Power amplification factor

Going back to our example, we find that $\log 275 = 2.439$ and $\log 55 = 1.740$, so the total gain in our cascade is

$$2.439 + 1.74 = 4.179 \text{ Bels}$$

It quickly occurred to the telephone company engineers that using Bels meant they would be working to at least two decimal places. They couldn't just round things off to one decimal place, since 4.179 bels is a power gain of 15,101 while 4.2 bels is a power gain of 15,849, yielding an error of about 5%. At that point it was decided to express power gain in units which were equal to one-tenth of a Bel, or in deci-Bels. This simply meant that the gain in Bels would be multiplied by 10, since there would be ten times more decibels than Bels. This changes the formula to

$$\text{Gain in decibels (dB)} = 10 \log A \quad (\text{Eq. 1})$$

Again using our example, the gain in the cascade is now

$$24.39 + 17.40 = 41.79 \text{ decibels}$$

The answer above is accurate, convenient to work with, and can be rounded off to the first decimal place with little loss in

accuracy; 41.79 dB is a power gain of 15,101, while 41.8 dB is a power gain of 15,136, so the error is only 0.23%.

What if the power gain factor is less than one, indicating an actual power loss? The calculation is performed as shown above using Equation 1, but the result will be different. Suppose we have a device whose power gain factor is 0.25, which means that it only outputs one-fourth of the power fed into it? Using Equation 1, we find

$$G = 10 \log (0.25)$$

$$G = 10 (-0.60)$$

$$G = -6.0 \text{ dB}$$

The minus sign occurs because the logarithm of any number less than 1 is always negative. This is convenient, since a power loss expressed in dB will always be negative.

There are two common methods of using the decibel. The first is to express a known power gain factor in dB, as just described. The second is to determine the power gain factor and convert it to dB, which can all be done in one calculation. The formula for this operation is as follows:

$$G = 10 \log \frac{P_o}{P_i} \quad (\text{Eq. 2})$$

where G = Gain in dB

P_o = Power output from the device

P_i = Power input to the device

Both P_o and P_i should be in the same units; i.e., watts, milliwatts, etc. Note that Equation 2 deals with power, not voltage or current; these are handled differently when converted to dB, and are not covered in this discussion. Below are two examples of the correct application of Equation 2:

Ex. 1: An amplifier supplies 3.5 watts of output with an input of 20 milliwatts. What is the gain in dB?

$$G = 10 \log \frac{3.5 \text{ watts}}{0.02 \text{ watts}}$$

$$G = 10 \log (175)$$

$$G = 10 (2.24)$$

$$G = 22.4 \text{ dB}$$

Ex. 2: A length of coaxial transmission line is being fed with 150 watts from a transmitter, but the power measured at the output end of the line is only 112 watts. What is the line loss in dB?

$$G = 10 \log \frac{112 \text{ watts}}{150 \text{ watts}}$$

$$G = 10 \log 0.747$$

$$G = 10 (-0.127)$$

$$G = -1.27 \text{ dB}$$

Uses of the Decibel with a Defined Reference

The most common "defined reference" use of the decibel is the dBm, or decibel relative to one milliwatt. It is different from the dB because it uses the same specific, measurable power level as a reference in all cases, whereas the dB is relative to either whatever reference a particular user chooses or to no reference at all.

The difference between "relative" and "defined reference" can be understood easily by considering temperature. For example, if I say that it is "20 degrees colder now than it was this morning," it's a relative measurement; unless the listener knows how cold it was this morning, there is no reference for comparison. If, however, I say, "It was 20 degrees C this morning, but it's 20 degrees colder now," then the listener knows exactly what is meant; it is now 0 degrees C. This can be measured on a thermometer and is referenced to a defined temperature scale.

So it is with dB and dBm. A dB has no particular defined reference while a dBm is referenced to a specific quantity: the milliwatt (1/1000 of a watt).

{NOTE: The IEEE definition of dBm is "a unit for expression of power level in decibels with reference to a power of 1 milliwatt." Note that no mention is made of the value of circuit impedance; the dBm is merely an expression of power present in a circuit relative to a known fixed amount (i.e., 1 milliwatt) and the

circuit impedance is irrelevant.}

We can apply this concept to Equation 1 as follows:

$$\text{dBm} = 10 \log (P) (1000 \text{ mW/watt})$$

where dBm = Power in dB referenced to 1 milliwatt
P = Power in watts

For example, take the case where we have a power level of 1 milliwatt:

$$\text{dBm} = 10 \log (0.001 \text{ watt}) (1000 \text{ mW/watt})$$

$$\text{dBm} = 10 \log (1)$$

$$\text{dBm} = 10 (0)$$

$$\text{dBm} = 0$$

Thus, we see that a power level of 1 milliwatt is 0 dBm. This makes sense intuitively, since our reference power level is also 1 milliwatt. If the power level was 1 watt, however, we find that

$$\text{dBm} = 10 \log (1 \text{ watt}) (1000 \text{ mW/watt})$$

$$\text{dBm} = 10 (3)$$

$$\text{dBm} = 30$$

The dBm can also be negative, just like the dB; if our power level is 1 microwatt, we find that

$$\text{dBm} = 10 \log (1 \times 10^{-6} \text{ watt}) (1000 \text{ mW/watt})$$

$$\text{dBm} = -30 \text{ dBm}$$

Since the dBm has a defined reference it can be converted back to watts if desired. Since it is in logarithmic form it may also be conveniently combined with other dB terms, making system analysis easier. For example, suppose we have a signal source with an output power of -70 dBm, which we wish to connect to an amplifier having 22 dB gain through a cable having 8.5 dB loss. What is the output level from the amplifier? To find the answer, we just add the gains and losses as follows:

$$\text{Output} = -70 \text{ dBm} + 22 \text{ dB} + (-8.5 \text{ dB})$$

Output = -70 dBm + 22 dB - 8.5 dB

Output = -56.5 dBm

As a final note, power level may be referenced to other quantities and expressed in dB form. Below are some examples:

dBW = Power level referenced to 1 watt

dBk = Power level referenced to 1 kilowatt (1000 watts)

One other common usage is dBc, which is essentially a relative term with a variable reference, like dB alone. It means "dB referenced to a carrier level" and is most commonly seen in receiver specifications regarding spurious signals or images. For example, "Spurious signals shall not exceed -50 dBc" means that spurious signals will always be at least 50 dB less than some specified carrier level present (which could mean "50 dB less than the desired signal").

Date: Wed, 9 Nov 1994 16:22:27 GMT
From: phb@syseng1.melpar.esys.com (Paul H. Bock)
Subject: What's your favorite key?

rkm@vectorbd.com writes:

> Since XMas is coming up (:-) I'm looking for recommendations on keys -
> both paddles and bugs. Any suggestions on what your preferred key is,
> for around \$100.00? I'm currently using a set of cheapie MFJ paddles,
> but have been looking at the Vibroplex offerings, as well as those by
> Jones, etc.

I use a Vibroplex Presentation I bought in 1963, but just about any Vibroplex bug suits me fine. You might find a good used one fairly cheap; if you have an option, go for one with a jeweled movement. If you're buying new, I think the basic "Original" is around \$100 but I don't know if the movement is jeweled; you might have to go for the "Original Deluxe" for that (more money; \$120 sticks in my mind, but that may not be accurate).

Can't speak to keyer paddles of any type; I've never used a keyer. Sorry.....

(|_|) Paul H. Bock, Jr. K4MSG Internet: pbock@melpar.esys.com

| |) Principal Systems Engineer Telephone: (703) 560-5000 x2062

"You can have my bug when you can pry my cold, dead fingers from around it....." - anonymous radiotelegraph operator

Date: Tue, 8 Nov 1994 16:51:53 GMT
From: rll@apnissun1.corp.arco.com (Richard L. Lamb)

References<397j0m\$5go@wanchai.hk.super.net> <CynGJI.1t6@news.arco.com>,
<39mnrq\$k1j@Owl.nstn.ca>
Subject: Re: Wanted: quality code practice audio

In article <39mnrq\$k1j@Owl.nstn.ca> ab006@cfn.cs.dal.ca writes:
>In article <CynGJI.1t6@news.arco.com>, rll@apnissun1.corp.arco.com (Richard L. Lamb) says:
>[chopped - bdt]
>>I'm looking for a way to generate high quality Morse audio for
>>code practice
>If you want to practice, why not practice what you're likely to
>hear in the real world?
>> I've tried a couple of computer programs playing through both
>>the computer speaker and a
>>Soundblaster, but neither method is of acceptable quality when
>>recorded on tape.
>What's 'acceptable' quality? If you want real world, a fifth-generation
>cassette copy
>might be 'better' than something hi-fi.
>>
>>I'd like sine wave output with a smooth keying envelope.
>... why? ...
>[...]
>>Richard L. Lamb, Jr. N6UDD Opinions expressed are my own,
>[...]
>Ben Tremblay VE1CBV
>p.s. I just finished 94SS/CW/QRP ... :-(

Ben, I've reformatted your post to <80 characters per line.

If by your first question you are implying that I should listen to on-the-air CW for practice, I do. At home, with my rig. However, I also have about four hours per day of bus commute that I'd like to use to improve my speed from 5wpm to 13wpm. Making tapes and listening to them with a personal stereo and headphones seems like a reasonable way to accomplish that. Unfortunately, with the wide frequency response of today's stereo headphones, listening to a square wave signal, complete with key clicks

and a DC bias, is only slightly less painful than CW via fingernails on a chalkboard.

Why would I like a clean, pleasant Morse audio source? So I can concentrate on copying the code, instead of gritting my teeth in response to the screeching in the headphones.

So if you, or anyone else, has seen any code practice oscillator circuits that generate sine wave audio without keyclicks and other annoyances, I'd be grateful for the information.

73, N6UDD

--

Richard L. Lamb, Jr. N6UDD
System Analyst
Atlantic Richfield Company
Los Angeles, California

Opinions expressed are my own,
not those of my employer.
Internet: rll@arco.com
BIX: rlamb Compuserve: 75765,1505

Date: 8 Nov 1994 19:26:21 -0500
From: kb7uv@panix.com (Andrew Funk)

References<clay.1419.2EBCB194@panix.com> <n1istCyyvo7.9x2@netcom.com>,
<784332822-0-147084@ns1.CC.Lehigh.EDU>
Subject: Re: NYC MARATHON

--

----- Andrew Funk, KB7UV -----
| ENG Editor/Microwave Control, WCBS-TV Channel 2 News, New York |
| Internet: kb7uv@panix.com Packet: kb7uv@kb7uv.#n1i.ny.usa |
| --- INSERT COMMERCIAL HERE --- |

End of Info-Hams Digest V94 #1201
